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**M013b: FIXED ROPE WITH INTERMEDIATE ANCHORS**

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<b>TSP Number/Title</b>	M013b: Fixed rope with intermediate anchors
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<b>Effective Date</b>	Implement next class iteration upon receipt
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<b>TSP User</b>	The following courses use this TSP: Summer Instructor Qualification Course Basic Military Mountaineering Course Assault Climbers' Course
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<b>Proponent</b>	United States Army Alaska, Northern Warfare Training Center
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<b>Improvement Comments</b>	Send comments and recommendations on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to:
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ATTN: TRAINING ADMINISTRATOR  
COMMANDANT USARAK NWTC  
1060 GAFFNEY ROAD #9900  
FORT WAINWRIGHT AK 99703-9900

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<b>Security Clearance/Access</b>	Public domain
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<b>Foreign Disclosure Restrictions</b>	The Lesson Developer in coordination with the USARAK NWTC foreign disclosure authority has reviewed this lesson. This lesson is releasable to foreign military students from all requesting foreign countries with Approval of Commandant USARAK NWTC.
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## PREFACE

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**Purpose**

This training support package provides the instructor with a standardized lesson plan for presenting instruction for:

Task Number	Task Title
VIII.0801	Fixed rope with intermediate anchors

**Technique of Delivery**

Lesson Number	Instructional Strategy	Media
M013b	Class and Practical Exercise	None

**This TSP contains**

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**SECTION I****ADMINISTRATIVE DATA****All courses  
including this  
lesson**

Course Number	Course Title(s)
NA	Mountain Instructor Qualification Course
NA	Assault Climber Course

**Task(s) Taught or  
Supported**

Task Number	Task Title
VIII.0802.01	Install fixed rope with intermediate anchors
VIII.0802.02	Move on a fixed rope with intermediate anchors
VIII.0802.03	Recover a fixed rope with intermediate anchors

**Task(s)  
Reinforced**

Task Number	Task Title
VI.0200	Risk Management for Mountain Operations
VIII.0100	Mountain Travel and Walking Techniques
VIII.0300	Rope Management and Knots
VIII.0400	Anchors
VIII.0500	Climbing
VIII.0600	Belay Techniques
VIII.0700	Roped Climbing
VIII.0801	Rope Installations (fixed rope)

**Test Lesson  
Number**

Hours	Lesson Number	Lesson Title
	M020	BMC Skills Evaluation Guide

**Prerequisite  
Lesson(s)**

-M005, Risk Management for Mountain Operations  
-M006, Mountain Travel and Walking Techniques, VII.0100.05, VII.0100.06, VIII.0100.07, VIII.0100.08, VIII.0100.09, VIII.0100.10  
-M008, Rope Management and Knots, VIII.0300.04, VIII.0300.06, VIII.0300.08, VIII.0300.09, VIII.0300.10, VIII.0300.11, VIII.0300.14, VIII.0300.15, VIII.0300.19;  
-M009, Anchors, VIII.0400.01, VIII.0400.02, VIII.0400.03, VIII.0400.04, VIII.0400.05, VIII.0400.06, VIII.0400.07, VIII.0400.08, VIII.0400.09, VIII.0400.10, VIII.0400.11  
-M010, Climbing, VIII.0500.01, VIII.0500.02, VIII.0500.03, VIII.0500.04  
-M011, Belay Techniques, VIII.0600.01, VIII.0600.03, VIII.0600.04, VIII.0600.05  
-M013, Rope Installations (Fixed Rope), VIII.801.01, VIII.801.01, VIII.801.02, VIII.801.03

**References**

Number	Title	Date	Additional Information
FM 3-97.6	Mountain Operations	NOV 00	
FM 3-97.61	Military Mountaineering	AUG 02	
NA	USARAK NWTC Mountain Operations Manual	FY 2003	
NA	Risk Management for Mountain Operations	FY 2003	

**Student Study**

Read M013b

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**Assignment**

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**Instructor  
Requirements**

One Small Group Leader TAITC, and Summer IQC qualified.

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**Additional  
Support  
Personnel  
Requirements**

None

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**Equipment  
Required****Instructor Equipment:**

- 1 climbing helmet
- 1 rope, dynamic kernmantle, 11mm x 50m
- 2 x webbing, nylon, 1" x 5.5 ft
- 2 x webbing, nylon, 1" x 9.5ft.
- 2 x webbing, nylon, 1" x 25 ft
- 2 x webbing, nylon, 9/16" x 9.5 ft
- 4 x webbing, nylon, 9/16" x 5.5ft
- 1 x carabiner, locking, "D" shaped aluminum
- 1 x carabiner, locking, "D" shaped steel
- 4 x carabiner, non locking, oval, steel
- 22 x carabiner, non locking, oval, aluminum
- 1 x rope, dynamic kernmantle, 7mm x 6ft
- 1 x rope, dynamic kernmantle, 7mm x 12ft
- 1 set wire stoppers
- 1 set hexentrics
- 1 set SLCD
- 1 ATC Friction device

**Student Equipment:**

- 1 climbing helmet
  - 1 rope, dynamic kernmantle, 11mm x 50m
  - 2 x webbing, nylon, 1" x 5.5 ft
  - 2 x webbing, nylon, 1" x 9.5ft.
  - 2 x webbing, nylon, 1" x 25 ft
  - 2 x webbing, nylon, 9/16" x 9.5 ft
  - 4 x webbing, nylon, 9/16" x 5.5ft
  - 1 x carabiner, locking, "D" shaped aluminum
  - 1 x carabiner, locking, "D" shaped steel
  - 4 x carabiner, non locking, oval, steel
  - 22 x carabiner, non locking, oval, aluminum
  - 1 x rope, dynamic kernmantle, 7mm x 6ft
  - 1 x rope, dynamic kernmantle, 7mm x 12ft
  - 1 set wire stoppers
  - 1 set hexentrics
  - 1 set SLCD
  - 1 ATC Friction device
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**Materials  
Required****Instructor Materials:**

- TSP
- NWTC Mountain Operations Manual
- Risk Management for Mountain Operations

**Student Materials:**

- NWTC Mountain Operations Manual
  - Risk Management for Mountain Operations
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**Classroom,  
Training Area  
and Range  
Requirements**

Mountaineering training/testing area large enough to facilitate students and SGL. Training area must have adequate routes for fixed rope with intermediate anchors.

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**Ammunition  
Requirements**

None

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**Instructional  
Guidance**

Before presenting this lesson, instructors must thoroughly prepare by studying this lesson and identified reference material.

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**Branch Safety  
Manager  
Approval**

NAME	Rank	Position	Date
Mark Gilbertson	GS-09	Training Specialist	

**Proponent  
Lesson Plan  
Approvals**

NAME	Rank	Position	Date
Peter Smith	GS-12	Training Administrator	

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## M013b: FIXED ROPE WITH INTERMEDIATE ANCHORS

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### SECTION II INTRODUCTION

Method of instruction: Small Group  
Type of instruction: Class  
Instructor to student ratio: 1:3  
Time of instruction: 5 ½ Hours  
Media used: None

**Motivator** The vast majority of routes selected for unit movements in mountainous terrain should require nothing more than good mountain walking techniques, and possibly some climbing. Even so, some of these non-technical or technical routes may be “exposed” and could result in a long hard fall. There are also obstacles to movement, avoided under normal circumstances that may have to be negotiated due to the tactical situation or lack of safer alternatives. One of the most useful rope installations for overcoming such obstacles is the fixed rope with intermediate anchors. This type of installation is a low load and is used to assist more personnel over exposed terrain in a faster amount of time.

#### Terminal Learning Objective

<b>ACTION:</b>	Demonstrate establishment, utilization and recovery of a fixed rope with intermediate anchors, during daylight or at night.
<b>CONDITION:</b>	Given a climbing rope and a rack with adequate hardware and sling material. The fixed rope with intermediate anchors will be constructed over steep exposed terrain. Installation will be performed by two climbers.
<b>STANDARD:</b>	Demonstrate establishment, utilization and recovery of a fixed rope with intermediate anchors, during daylight or at night IAW the NWTC Mountain Operations Manual.

#### Safety Requirements

Ensure that students:

- Receive a risk assessment prior to movement to the mountaineering training area and before practical exercises.
- Wear helmets during PE
- Have all necessary equipment for the PE's, to include any additional equipment required by the NWTC SOP.
- Have two full canteens and drink adequate water to avoid becoming dehydrated.
- Receive a briefing on the symptoms of heat injury or cold weather injury, as appropriate.

**Risk Assessment Level** Determined by instructor

**Environmental Considerations** None

**Evaluation** Prior to the field training exercise you will participate in a practical exercise examination testing your ability to install and move on a fixed rope with intermediate anchors. You will have 1 hour to set up the installation. The movement demonstration and the recovery are not timed. All critical performance measures must be met in order to achieve a GO.

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NOTE: Inform the students where their examination will take place as posted on the training schedule and when they will receive feedback on the test. Include any retest information.  
Inform the students that they must turn in all recoverable reference material after the examination.

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**Instructional Lead-in** You have already mastered the skills of rope management and knots, rigging anchors, tying into the climbing rope, belays and climbing. You will now use a combination of these skills to properly install, move on and recover a fixed rope with intermediate anchors.

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**SECTION III****PRESENTATION**

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**ELO A**

<b>ACTION:</b>	Install a fixed rope with intermediate anchors
<b>CONDITION:</b>	Given a climbing rope and a rack with adequate hardware and sling material. The fixed rope with intermediate anchors will be constructed over steep terrain. Installation must be performed by two climbers.
<b>STANDARD:</b>	Install the fixed rope with intermediate anchors IAW the NWTC Mountain Operations Manual.

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**Learning Step Activity 1 - Installing a Fixed Rope with Intermediate Anchors**

a. Whenever a route varies from the fall line of the slope, the fixed rope must be anchored at "intermediate" points along its length. Intermediate anchor points should also be used on any long routes that exceed the length of a single rope. "Independent" sections of fixed line are isolated sections of rope formed between any 2 anchor points, allowing more personnel to move on the installation at a time. The intermediate anchor points also allow for changes in direction from one section to the next; this is not possible when the line is simply anchored at the top. This type of fixed line is commonly used along exposed ridges and narrow mountain paths. It is also installed in this manner for protecting and assisting personnel on long, dangerous traverses.

b. To install a fixed rope with intermediate anchors, two experienced climbers rope up for a climb. The leader must carry with him all equipment necessary to protect himself, emplace intermediate anchors at locations that will support the completed system, and establish an anchor at the top of the pitch.

c. The second will set up a belay.

d. The leader climbs the pitch, routing the rope and placing anchors as in a typical roped climb. Upon reaching the top of the pitch, the leader will temporarily anchor the rope. He should then anchor himself if there is any chance of him slipping or falling.

e. He will then take up the excess slack and attach the rope to the anchor. He must ensure that he leaves enough slack in the rope so the 2nd can tie knots to fix the rope. When the rope is anchored the leader will either safety off or move more than one body length from the edge and signal OFF BELAY.

f. The second unties from the rope and anchors it at the bottom. He will use a prussik as a self belay while he climbs and ties the rope into the intermediate anchor points.

1. When he reaches an anchor, he will unclip the climbing rope from the anchor so he can move his prussik above the placement. He then takes the slack out of the rope below him and attaches the rope to the anchor using either a clove hitch or a figure eight loop. The clove hitch usually works best because it uses a minimal amount of rope and is easily adjustable.

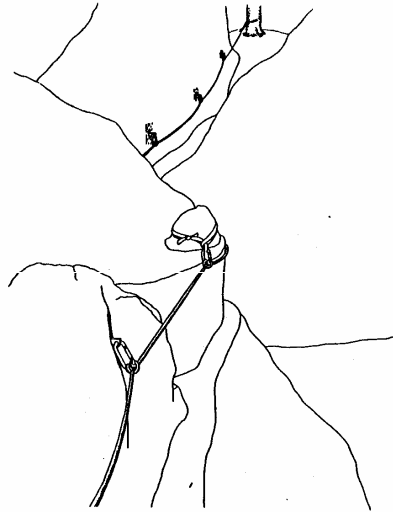
2. In order to isolate one section from another, a second piece of protection is emplaced and the rope is clove hitched to it with a slight droop in between the anchors. If a second piece cannot be placed, a second runner is attached to the present anchor and the rope is attached in the same manner.

g. The second now moves to the next anchor point and repeats the procedure. If a long runner is used at any anchor point, the second should adjust the section below it so the runner is oriented in the direction of pull on the anchor. This will isolate the lower section so a load on it will not greatly affect the section directly above it. The sections are normally adjusted fairly snug between the anchor points. Slack may be left in a section when moving around obstacles or large bulges in the terrain.

h. When the second reaches the top of the pitch, the rope is removed from the top anchor and the remaining slack is taken out of the last section. The end of the rope is then re-anchored.

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### Fixed Rope Using Intermediate Anchor Points

#### ELO B

<b>ACTION:</b>	Move on a fixed rope with intermediate anchors
<b>CONDITION:</b>	In a field environment on a single pitch of steep and exposed terrain, given a fixed rope with intermediate anchors that has been installed to standard, an improvised seat harness, 1 x rope, dynamic kernmantle, 7mm x 6ft., 1 x rope, dynamic kernmantle, 7mm x 12ft., 1 x webbing nylon, 1in x 5.5ft., 1 x carabiner, locking, "D" shaped aluminum, and 2 x carabiner, oval shaped aluminum
<b>STANDARD:</b>	Move on a fixed rope with intermediate anchors IAW the NWTC Mountain Operations Manual.

#### Learning Step Activity 1 - Moving on a Fixed Rope with Intermediate Anchors

a. Personnel should be attached to the fixed line during movement for added security. If a self belay is desired, a seat harness should be worn using a short prusik for the self-belay. An additional short sling is attached to the seat harness using a girth hitch, with a carabiner placed in the other end.

b. When an individual reaches an anchor point, he uses the sling as a safety line, clipping into or above the anchor for security while he removes the prusik from his harness so he can re-tie it on the next section. He then connects the prusik back into his harness, removes the safety line, and continues up the next section.

c. In cases where a true self belay is not required, an individual can be attached to the fixed rope with only a safety line. In this case the individual could tie into the middle of a 16' sling rope, fixed loops are tied in the remaining running ends, and a carabiner is attached to each loop. The individual now has two attachment points to the fixed rope.

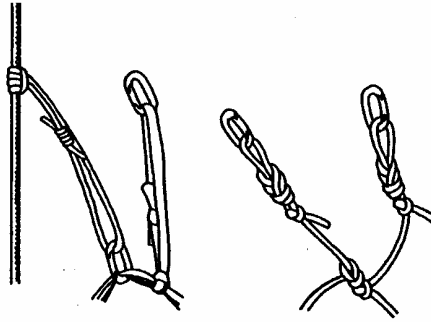
1. Upon reaching an anchor point, one safety line is removed and attached above the anchor to the next section.

2. The second safety line is removed and placed on the new section. In this way, the individual is always secured by at least one safety line.

d. Personnel move on a fixed rope one at a time on each section. After an individual changes over to a

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new section, he signals the person below to "climb".



### Self- Belay and Safety Lines Used on a Fixed Rope

e. Personnel move on a fixed rope one at a time on each section. After an individual changes over to a new section, he signals the person below to "CLIMB". When descending on the fixed line, personnel can either down climb, using the rope for assistance, or descend using a hasty rappel. Again, if the fixed rope was installed correctly, a pull or load placed on any one section by an individual should not place a load on any other section or person.

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#### ELO C

<b>ACTION:</b>	Recover a fixed rope with intermediate anchors
<b>CONDITION:</b>	In a field environment on a single pitch of steep and exposed terrain, given a fixed rope with intermediate anchors that has been installed to standard, and all equipment.
<b>STANDARD:</b>	Recover a fixed rope with intermediate anchors IAW the NWTC Mountain Operations Manual.

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#### Learning Step Activity 1 - Recovering a Fixed Rope with Intermediate Anchors

a. When the installation is to be retrieved, the next to the last man on the system will untie the rope from the intermediate anchors as he ascends. He should be attached to the rope with a self belay.

1. When he completes the pitch, the rope will be simply clipped to the top anchor placement running the same way as when the initial climber routed the rope.

2. The last man will remove the rope from the bottom anchor and tie into the end. He will clean the pitch as he climbs while being belayed from above.

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**SECTION IV****SUMMARY**

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**Check on Learning**

- a. What type of knot does the second use to isolate the sections?  
The preferred knot is the clove hitch, since it is easily adjusted.
- b. How do personal move on the fixed rope with intermediate anchors?  
By using a self-belay.
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**Review and Summarize Lesson**

<b>ACTION:</b>	Demonstrate establishment, utilization and recovery of a fixed rope with intermediate anchors, during daylight or at night.
<b>CONDITION:</b>	Given a climbing rope and a rack with adequate hardware and sling material. The fixed rope with intermediate anchors will be constructed over steep exposed terrain. Installation will be performed by two climbers.
<b>STANDARD:</b>	Demonstrate establishment, utilization and recovery of a fixed rope with intermediate anchors, during daylight or at night IAW the NWTC Mountain Operations Manual.

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**Transition to next lesson**

As per the NWTC training schedule; dependent upon the course in conduct.

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**SECTION V****STUDENT EVALUATION**

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**Testing  
Requirements**

Information covered in this lesson may appear on the end of course written examination.

You will receive a 1 hour performance examination to determine if you can install, move on and recover a fixed rope with intermediate anchors. Only the installation portion of the examination will be timed. The examination is a buddy team event, and you must meet all critical performance measures to receive a go.

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**Feedback  
Requirement**

**NOTE:** Inform the students of where the examination will take place as posted on the training schedule, and when they will receive feedback on the test. Include any retest information.

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